

REMARKS

In response to the Office Action dated November 9, 2006, claims 1-5 and 7 are amended. Claims 1-7 are now active in this application. No new matter has been added.

Applicants appreciate the Examiner's indication of allowable subject matter in independent claims 1 and 2, which would be allowable if rewritten or amended to overcome the pending claim objections. Independent claims 1 and 2 have been amended according to the Examiner's suggestions from page 2 of the Office Action. Thus, Applicants submit that amended independent claims 1 and 2 are allowable.

Claims 3-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Jeckeln et al., U.S. 2002/0191710 (herein Jeckeln) in view of Booth et al., US 6,512,417 (herein Booth '417).

Claims 6 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Jeckeln in view of Booth '417, and further in view of Tapio et al., US 6,741,663 (herein Tapio).

Amended independent claim 3 recites, in part, "feedback circuitry for receiving the phase-modulated signal and the communications signal, and producing, as feedback information in IQ (In-phase and Quadrature) form for linearity compensation of the communications signal transmitter, in-phase and quadrature components representing a phase difference between the phase-modulated signal and the communications signal."

One example of these features of claim 3 is shown in FIG. 1. The feedback circuitry (the IQ demodulator 113) receives the phase-modulated signal (121) and the communication signal (119). The in-phase and quadrature components represent a phase difference between the phase-modulated signal and the communications signal, and are produced as feedback information in

IQ (In-phase and Quadrature) form for the linearity compensation of the communications signal transmitter (amplifier or amplifier chain 107).

More specifically, as described at page 5, paragraphs 2 and 3 of the Applicant's specification, the phase-modulated signal inputted to the amplifier 107 may be represented as:

$$\cos[\omega t + \Phi(t)]$$

and the communication signal (amplifier RF output signal 111) outputted from the amplifier 107 can be represented as:

$$\rho(t)\cos\{\omega t + \Phi(t) + \theta + \text{PM}[\rho(t)]\}$$

wherein θ is a "static" frequency-dependent phase shift introduced by the amplifier, and

wherein $\text{PM}[\rho(t)]$ is a "dynamic" frequency-dependent phase shift resulting from AM-PM distortion of the amplifier.

The phase-modulated or reference signal 121 is mixed with the communications or measurement signal 119 by using the I mixer 115a, and then used to generate I signal 137a. Additionally, the phase-modulated or reference signal 121 is phase shifted 90 degrees by phase shifter 123 to become reference signal 125, which is mixed with the communications or measurement signal 119 by using the Q mixer 115b, and then used to generate Q signal 137b. In this fashion, communications or measurement signal 119 is used to obtain, with high accuracy, feedback information for the linearity compensation of amplifier 107.

In order to establish *prima facie* obviousness under 35 U.S.C. § 103(a), all the claim limitations must be taught or suggested by the prior art. *In re Rokya*, 490 F. 2d 981, 180 USPQ 580 (CCPA 1974). At a minimum, the cited prior art does not disclose (expressly or inherently) the above recited limitation.

The Office Action asserts, at page 3, that Jeckelyn discloses feedback circuitry at a feedback loop path from element 50 and 56 through 48 in FIG.1. Jeckelyn does disclose feedback circuitry in FIG. 1. However, Jeckelyn does not teach or suggest “feedback circuitry for receiving the phase-modulated signal and the communications signal, and producing, as feedback information in IQ (In-phase and Quadrature) form for linearity compensation of the communications signal transmitter, in-phase and quadrature components representing a phase difference between the phase-modulated signal and the communications signal” as recited by independent claim 3.

Further, Booth ‘417 does not disclose any feedback at all from output 28 in FIG. 2. Specifically, output 28 in FIG. 2 is not used as an input to any elements that feedback to amplifier 22. Thus, Booth ‘417 does not teach or suggest the above recited limitation of independent claim 3.

Tapio does disclose feedback from coupler 105 in FIG. 2. However, Tapio does not teach or suggest “feedback circuitry for receiving the phase-modulated signal and the communications signal, and producing, as feedback information in IQ (In-phase and Quadrature) form for linearity compensation of the communications signal transmitter, in-phase and quadrature components representing a phase difference between the phase-modulated signal and the communications signal” as recited by independent claim 3.

Thus, Applicants respectfully submit that independent claim 3 is distinguished from all of the cited art, and is allowable for at least the above reasons.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*,

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819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 3 is patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon (4-7) are also patentable.

Thus, Applicants respectfully submit that dependent claims 4-7 are allowable for at least the same reasons as independent claim 3.

Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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